

HP Operations Smart Plug-in for HP Storage Essentials SRM

for HP Operations Manager for Windows®

Software Version: 1.70

Installation and Reference Guide

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1 HP Storage Essentials SRM Overview

HP Storage Essentials SRM (SE SRM) is a family of open standards-built storage area network management and storage resource management solutions that enable you to visualize, monitor, report on, provision, and manage your heterogeneous storage environment with simplicity and speed.

The HP Storage Essentials SRM suite integrates with HP Systems Insight Manager (HP SIM) to provide advanced server and storage management capabilities. It features a base management console and an expanding portfolio of value added plug-ins. HP Storage Essentials SRM is accessed through HP SIM menu items that are labeled HP Storage Essentials SRM.

Key Features and Benefits of HP Storage Essentials SRM

- **Visualization**

Discovers automatically and maps the storage network (DAS, SAN, NAS) and backup topology by displaying the objects, path, and zones between the application and the LUN on which the corresponding data resides.

- **Zoning and provisioning**

Enables end-to-end zoning and provisioning tasks at the host, switch, and disk subsystem layers. Provides a common interface for a multi-vendor storage environment.

- **Utilization management**

Monitors availability and utilization at hosts, switches, and arrays. Provides graphical trending and forecasting. Soft Quota management enables proactive monitoring of consumption levels. File system management provides file-level scanning, analysis, reporting, and policy-based management capabilities.

- **Performance management**

Monitors performance from application objects down to storage subsystems. Monitors applications, hosts, HBAs, switches, and disk subsystems. Enables quick detection of bottlenecks that cause performance problems.

- **Chargeback**

Supports customizable chargeback values, depreciation formulas, asset-based and storage-based chargeback models, and business unit groupings. Reports enable administrators to associate costs with the quality and quantity of storage used by different business units.

- **NAS management**

Analyzes the impact of configuration changes and file sharing activities.

- **Backup management**

Offers a single view of backup activities. Identifies unprotected applications, servers, and files. Enables root cause analysis of backup failure. Increases utilization of backup resources.

- **Standards-based architecture**

Designs solution on the Storage Management Initiative Specification (SMI-S), the storage industry standard for heterogeneous storage network management based on the Common Information Model (CIM) and Web-Based Enterprise Management (WBEM). Enables support for multi-vendor storage infrastructures and ensures that investments are protected.

CIM is a common data model of an implementation-neutral schema for describing overall management information in a network/enterprise environment. CIM consists of a specification and a schema. The specification defines the details for integration with other management models such as Simple Network Management Protocols (SNMPs), Management Information Base (MIBs), and the Distributed Management Task Force's (DMTFs) Maker Interchange Formats (MIFs). The schema provides the actual model descriptions.

- **Customizable reports**

Generates an extensive set of out-of-the-box reports that satisfy requirements related to capacity management, planning, performance management, asset management, and chargeback. Reports can be customized and scheduled for automatic email distribution. Supports a wide variety of reporting formats, including HTML, XML, Microsoft Excel, and PDF.

- **End-to-end visibility of business applications**

Provides an interface to monitor business applications, including their associated infrastructure and interdependencies.

- **Web-based global management console**

Manages heterogeneous storage environments through a web-based user interface.

- **Reporting**

Offers flexible, in-depth report generation in both predefined and user-defined formats. It can also export data to other management applications.

- **Standards-based architecture**

Protects user flexibility and investments with a standards-based interface for managing heterogeneous storage environments.

- **Storage server, network, and subsystem provisioning**

Reduces manual processes and risk of downtime caused by free-space outages with multi-level storage provisioning.

- **Integrated storage management**

Lowers cost of acquiring and managing a heterogeneous storage environment by using multiple disparate point solutions.

You can find more information on features of HP Storage Essentials SRM and other HP management products at the following HP web sites:

<http://www.managementsoftware.hp.com/>

<http://www.hp.com/go/storageessentials>

HP Storage Essentials SRM SPI Overview

The HP Operations Smart Plug-in for HP SE SRM (the HP Storage Essentials SRM SPI) integrates HP SE SRM with HP Operations Manager (HPOM). The HPOM management scope for the HP Storage Essentials SRM SPI includes storage infrastructure managed by HP SE SRM installed in an environment that consists of the HPOM.

The HP Storage Essentials SRM SPI is used to monitor the HP SE SRM services and infrastructure. The HP Storage Essentials SRM SPI, along with the HP Operations Manager Integration for HP Systems Insight Manager (the HP SIM Integration), integrates HP SE SRM with HPOM by forwarding storage events through the HP SIM Integration.

The HP SIM Integration, together with the HP Storage Essentials SRM SPI, allows the storage network to be monitored and managed from the HPOM management server console.

The HP Storage Essentials SRM SPI enables HPOM administrators to troubleshoot problems in the storage network before they become serious enough to affect tools and, ultimately, the end-users. Storage events are stored in the HPOM database. The HPOM intelligent agents are configured on the HP SIM Central Management Server (CMS) and the HP SE CMS..

Features and Functionality of the HP Storage Essentials SRM SPI

- **Service Discovery**

Discovers the HP SE SRM CMS and HP SE SRM-managed hosts CIM Extension services.

- **Service and process monitoring**

Monitors the availability of the HP SE SRM CMS and HP SE SRM CIM Extension. Any service alerts can be communicated to the HPOM service map and the HPOM active message browser. This enables administrators to perform root-cause analysis of the inherent HP SE SRM services.

- **Policy groups**

Contains policies for monitoring the HP SE CMS process (AppStorManager) and the HP SE CIM Extension process.

- **Tool groups**

Contains tools to start, stop, and view the status of the HP SE CMS process (AppStorManager) and the HP SE CIM Extension process. It also has a tool to import the SE Infrastructure elements to the SE Node Bank.

2 Installing the HP Storage Essentials SRM SPI

To avoid problems during installation, you should first read this section and the documents named in this section before you start the installation process.

Requirements

Hardware Requirements

The following documents explain all the hardware requirements:

- For the HPOM 8.10:
HP Operations Manager for Windows Installation Guide
- For the HPOM 8.10 HTTPS managed nodes:
HP Openview Operations HTTPS Agent Concepts and Configuration Guide
- For HPOM 8.10 DCE managed nodes:
HP Operations Manager OM DCE Agent Concepts and Configuration Guide

Disk Space Requirements

Table 1 Disk space requirements

System	Operating System	Installation	Runtime Files	Total
HPOM management server 8.10	Windows 2008 EE (32-bit) Windows 2003 R2 (32-bit)	4 MB	1 MB	5 MB
OVOW 7.5	Windows 2003 (32-bit)	4 MB	1 MB	5 MB
HPOM managed node	HP-UX 11.11 HP-UX 11.23 IA HP-UX 11.23 PA HP-UX 11.31 PA HP-UX 11.31 IA	1 MB	1 MB	2 MB
	Solaris 8, 9,10			
	RedHat Linux Advanced Server 4.0 (32-bit and 64-bit) RedHat Linux Advanced Server 5.0 (32-bit) SuSE Linux Enterprise Server 10 (32-bit)			
	AIX 5.1, 5.2, and 5.3			
	Tru64 5.1B			
	Microsoft Windows 2003 (32-bit and 64-bit) Microsoft Windows 2003 R2 (32-bit and 64-bit) Microsoft Windows 2008 (32-bit)	1 MB	1 MB	2 MB



No additional memory (RAM) is required either on the HPOM or on the managed nodes for the HP Storage Essentials SRM SPI.

Software Requirements

- OVO for Windows 7.50 or HPOM for Windows 8.10 updated with the latest server and agent patches
- HP Systems Insight Manager 5.1 or 5.2
- HP SE 5.1or 5.1.1 (Linux) or HP SE SRM 6.0
- HP SIM Integration, Version 1.70
- HP Operations Smart Plug-In Self-Healing Integration Component, Version 2.30
- Install OVOW_00244 patch to run the HP Storage Essentials SRM SPI 1.70 on HP OVOW 7.50

For more information on installing the HP SIM Integration, see the *HP Operations Integration for HP Systems Insight Manager Administrator's Reference for HP Operations Manager for Windows*.

HPOM Management Server Versions

Table 2 Versions of HPOM management server

HPOM Management Server	Operating System	HPOM Agent Types
OVO 7.50	<ul style="list-style-type: none">• Microsoft Windows 2003 (32-bit)	DCE
HPOM 8.10	<ul style="list-style-type: none">• Microsoft Windows 2003 (32-bit)• Microsoft Windows 2003 R2 (32-bit)• Microsoft Windows 2008 EE (32-bit)	HTTPS DCE

HP Systems Insight Manager CMS Versions

Table 3 **Versions of HP Systems Insight Manager CMS**

HP Systems Insight Manager CMS	Operating System
HP SIM 5.1 HP SIM 5.2, 5.2 SP1, 5.2 SP2	<ul style="list-style-type: none">• Windows 2003 (32-bit)• Windows 2003 R2 (32-bit)• RedHat Linux AS 4 (32-bit and 64-bit)• RedHat Linux AS 5 (64-bit)• SuSE Linux ES 9 (32-bit)• SuSE Linux ES 10 (32-bit)

HP SE SRM CMS Versions

Table 4 **Versions of HP SE SRM CMS**

HP SE SRM	Operating System
HP SE SRM 6.0, SP1, SP2	Windows 2003 (32-bit))
HP SE 5.1 SP5	Windows 2003 R2 (32-bit)
HP SE 5.1.1 SP5	RedHat Linux EL 4.0 (32-bit)
	SuSE Linux ES 9 (32-bit)

CIM Extension and HPOM Agent Versions

Table 5 **Versions of CIM Extension and HPOM Agent**

Agent	Operating System
CIM Extension HPOM Agent	Windows 2003 (32-bit and 64-bit)
	Windows 2003 R2 (32-bit and 64-bit)
	Windows 2008 (32-bit)
	HP-UX 11.11
	HP-UX 11.23 PA
	HP-UX 11.23 IA
	HP-UX 11.31 PA
	HP-UX 11.31 IA
	Solaris 9
	Solaris 10
	RedHat Linux EL 4.0 (32-bit)
	RedHat Linux EL 4.0 (64-bit)
	SuSE Linux ES 9 (32-bit)
	SuSE Linux ES 9 (64-bit)
	AIX 5L 5.1
	AIX 5L 5.2
	AIX 5L 5.3
	Tru64 5.1 B

Installing the HP Storage Essentials SRM SPI

You can install the HP Storage Essentials SRM SPI from the HP Operations Smart Plug-ins DVD. The Installer executable verifies whether HPOM is installed. It also installs the package and loads the selected packages to the HPOM management server. Follow these steps:

- 1 Make sure that the HPOM system where you want to install the HP Storage Essentials SRM SPI meets the installation requirements listed at the beginning of this chapter.
- 2 Log on to HPOM as an administrator.
- 3 Insert the HP Operations Smart Plug-ins DVD. The installation wizard opens.

Product Selection

Select the products and components you want to install.

HP Operations Smart Plug-ins For Windows

Product/Component	Version Installed	Action
<input type="checkbox"/> IBM WebSphere		
<input type="checkbox"/> SPI		
<input type="checkbox"/> Graphs		
<input type="checkbox"/> Reports		
<input type="checkbox"/> JMX Metric Builder		
<input type="checkbox"/> Informix		
<input type="checkbox"/> SPI		
<input type="checkbox"/> Graphs		
<input type="checkbox"/> Reports		
<input type="checkbox"/> Microsoft SQL Server		
<input type="checkbox"/> SPI		
<input type="checkbox"/> Graphs		
<input type="checkbox"/> Reports		
<input type="checkbox"/> Oracle		
<input type="checkbox"/> SPI		
<input type="checkbox"/> Graphs		
<input type="checkbox"/> Reports		
<input type="checkbox"/> Sybase		
<input type="checkbox"/> SPI		
<input type="checkbox"/> Graphs		
<input type="checkbox"/> Reports		
<input type="checkbox"/> HP SIM Integration		
<input checked="" type="checkbox"/> HP Storage Essentials SRM	Install	1.70.15

Checkboxes are disabled if the latest version of the SPI is already installed. Reports checkboxes are disabled if the HP Reporter is not installed or the reporter service is disabled and Graphs checkboxes are disabled if HP Performance Manager is not installed.

installShield

< Back

Next >

Cancel

- 4 Select **SPI for HP SE SRM** in the Product Selection window and click **Next**.



Selecting SPI for HP SE SRM in the Product Selection window also installs HP SIM Integration.

- 5 Follow the on-screen instructions to complete the installation process.

The wizard displays the status of the installation.

- 6 Click **Finish** to exit from the installation wizard.

For more information on installing HP Operations new and upgraded Smart Plug-ins, see the *HP Operations Smart Plug-ins DVD, Installation and Upgrade Guide*.

Upgrading the HP Storage Essentials SRM SPI

Follow these steps:

- 1 Read the hardware and software requirements provided at the beginning of this chapter.
- 2 Preserve any policy customization you made in the previous version by making a backup to save the complete and current HP Storage Essentials SRM SPI policies.
- 3 Stop HP System's Insight Manager SPI Event Listener using the Stop Event Listener tool.
- 4 Remove nodes from the node group using the De-assign node from node group tool.
- 5 Install the HP Storage Essentials SRM SPI from the DVD by following the steps provided in [Installing the HP Storage Essentials SRM SPI](#) on page 18.
- 6 Remove the old HP Storage Essentials SPI user role by following these steps.
 - a Select **Actions > Configure > User Roles**. You can also click User Roles Configuration Editor, which is located on the menu bar of the main HPOM.

The User Roles window opens.
 - b Select HP Storage Essentials SPI Admin, and click Delete
- 7 Ensure that the Auto-deployment registry variable **Disable** is set to False.
- 8 Assign nodes to the node group that you removed using Assign node to node group. Redeploy the instrumentations and policies manually if they are not deployed automatically.
- 9 Run the Get HP SIM Credentials and Start Event Listener tools.

Verifying Installation

Open the HPOM console and check that the following elements are present.

Table 6 List of elements to be present on the HPOM console

HPOM Console	Element
Node Groups	HP SE SRM CMS-Win HP SE SRM CMS-Unix HP SE SRM CIM Extn-Win HP SE SRM CIM Extn-Unix
Tool Groups	HP Storage Essentials SRM <ul style="list-style-type: none">• AppStorManager-Win• AppStorManager-Unix• CIM Extension-Win• CIM Extension-Unix• HPSESRMSPI Utils
Policy Groups	HP Storage Essentials SRM <ul style="list-style-type: none">• AppStorManager-Win• AppStorManager-Unix• CIM Extension-Win• CIM Extension-Unix• Service Discovery
User Roles	HP SE SRM SPI Admin

If they are not present in the HPOM console, uninstall the HP Storage Essentials SRM SPI (see [Uninstalling HP Storage Essentials SRM SPI from HPOM](#) on page 64) and reinstall it (see [Installing the HP Storage Essentials SRM SPI](#) on page 18).

Installed File Locations

The installation process copies the necessary files on the HPOM.

Table 7 Location of the installed files on the HPOM

File Type	Location on the HPOM
Binaries and Scripts	<OvInstallDir>install\HPSESRMSPI <HPOMShareInstallDir>SPI-Share\HPSESRMSPI
Instrumentation	<OvInstallDir>Data\shared\Instrumentation\Supported Operating Systems\HP Storage Essentials SRM
Documentation	<OvInstallDir>install\HPSESRMSPI\doc
MofFiles	<OvInstallDir>install\HPSESRMSPI\NLS\1033\MofFiles

The following lists the directories that are used on deployment of the policies to the HPOM managed node(s).

Table 8 List of Directories

Operating System	File Location
HP-UX, Solaris, Linux, Tru64	/var/opt/OV/bin/instrumentation
Microsoft Windows	<OvAgentDir>\bin\instrumentation
AIX	/var/lpp/OV/OpC/instrumentation

The HP Storage Essentials SRM SPI instrumentation scripts are copied into these paths when the HP SE SRM instrumentation is deployed to the managed nodes.

3 Configuring the HP Storage Essentials SRM SPI

Configuring the HP Storage Essentials SRM SPI requires the following tasks.

Task 1: Install the HPOM Agent on Nodes

The HPOM agent must be installed on all the nodes that needs to be managed by the OM. Before starting, make sure that the system on which you want to install the HPOM agent meets the installation requirements provided in [Chapter 2, Installing the HP Storage Essentials SRM SPI](#).

You can install the HPOM agent on a managed node by various methods. For more information on the various installation methods, see the *HP Operations Manager for Windows Installation Guide* and also the documents listed in [Chapter 2, Installing the HP Storage Essentials SRM SPI](#).

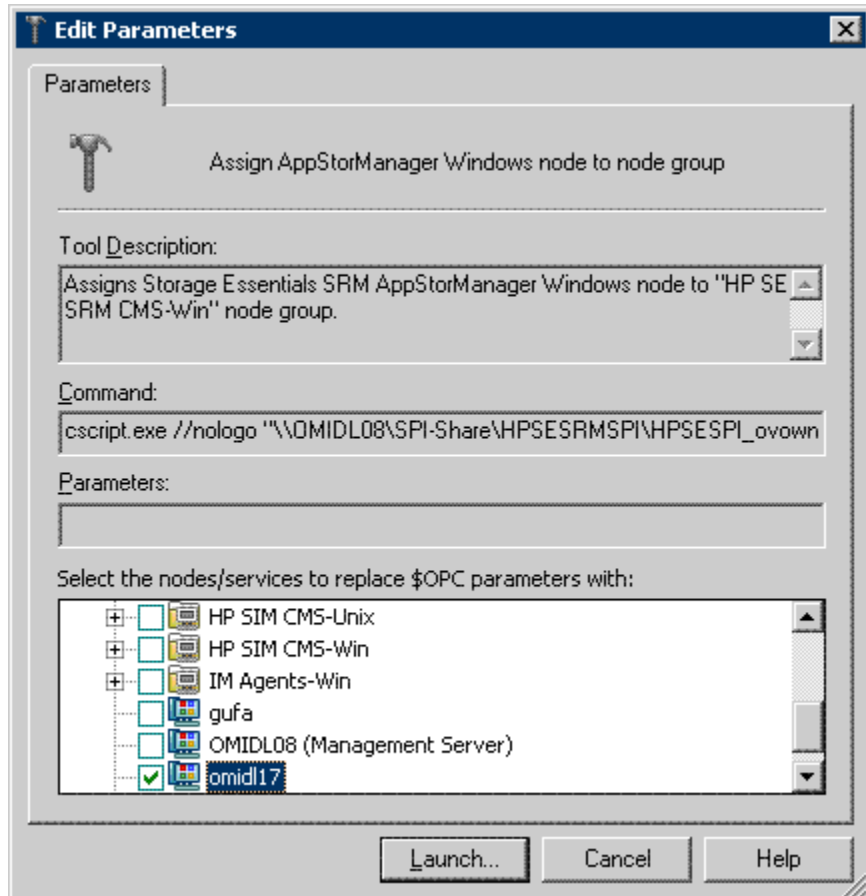
Task 2: Assign Nodes to the HP SE SRM Node Group

Assigning the AppStorManager Node to the Node Group

This tool assigns the node to the chosen HP SE SRM CMS node group and deploys the HP SE SRM policy groups **AppStorManager-Unix** or **AppStorManager-Win** (depending on your node's operating system) and Service Discovery policies. The service discovery policy deployment causes the HP SE SRM discovery process to run. If an HP SE SRM service is not discovered, the corresponding monitor policy is disabled.

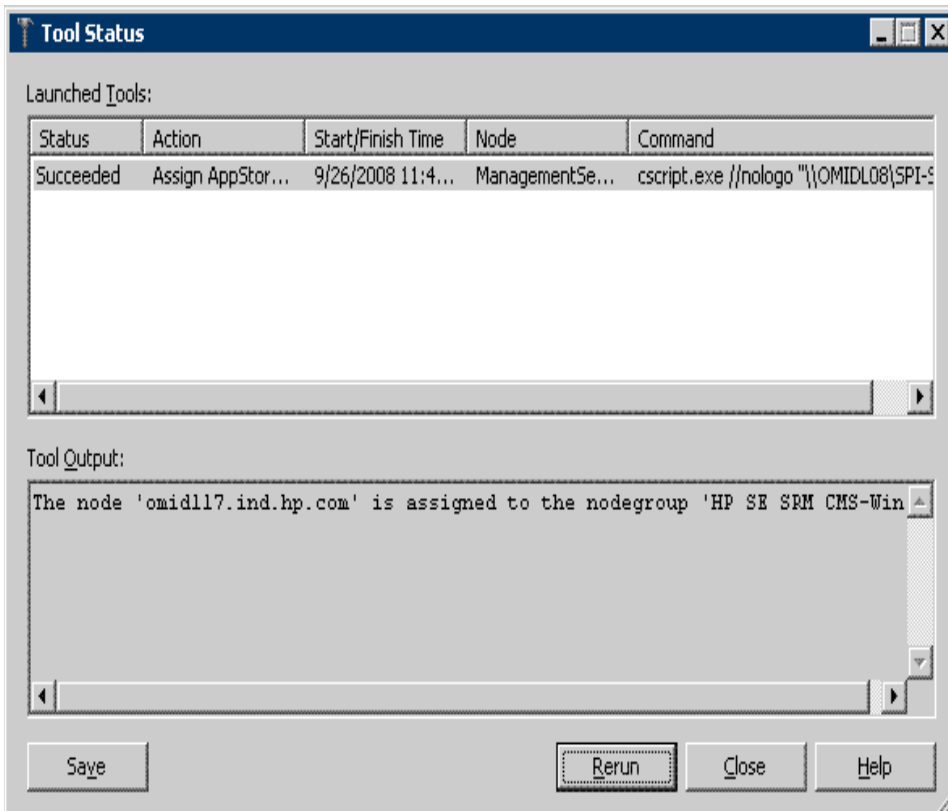
To assign the nodes on which the SE SRM AppStorManager service is running to the node group, follow these steps:

- 1 Log on to the HPOM management server, and start the HPOM Console.
- 2 Select **Tools > HP Storage Essentials SRM > AppStorManager-Unix or AppStorManager-Win** and right-click **Assign AppStorManager node to node group**.
- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 4 From the **Select the nodes/services to replace \$OPC parameters with**, select the node on which the SE SRM AppStorManager service is running.

- 5 Click **Launch....** The Tool Status window opens.



This assigns the node on which the SE SRM AppStorManager process is running to the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group.



When the managed node is assigned to the HP SE CMS-Win Node group using “Assign Node to Node Group” Tool, the following warning message is displayed on the HPOM.

Discovery command "C:\WINDOWS\system32\cmd.exe /C "perl "C:/Documents and Settings/All Users/Application Data/HP/HP BTO

Software/bin/instrumentation/HPSESPI_CreateHostServices.pl"" returned with non-zero return value.

This occurs because HPSIM authentication is not provided. The authentication is provided when you run the **Get HP SIM Credentials** tool from the **HPSESRMSPi Utils** tools group .



When the new nodes are added in the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group, the Service Discovery policy is deployed to each new node.

Assigning the HP SE SRM CMS node to the node group also invokes auto-deployment of HP Storage Essentials SRM SPI Service Discovery and AppStorManager Service Monitoring policies to the node. The HP SE SRM instrumentation gets auto-deployed along with the Service Discovery policy to the node.



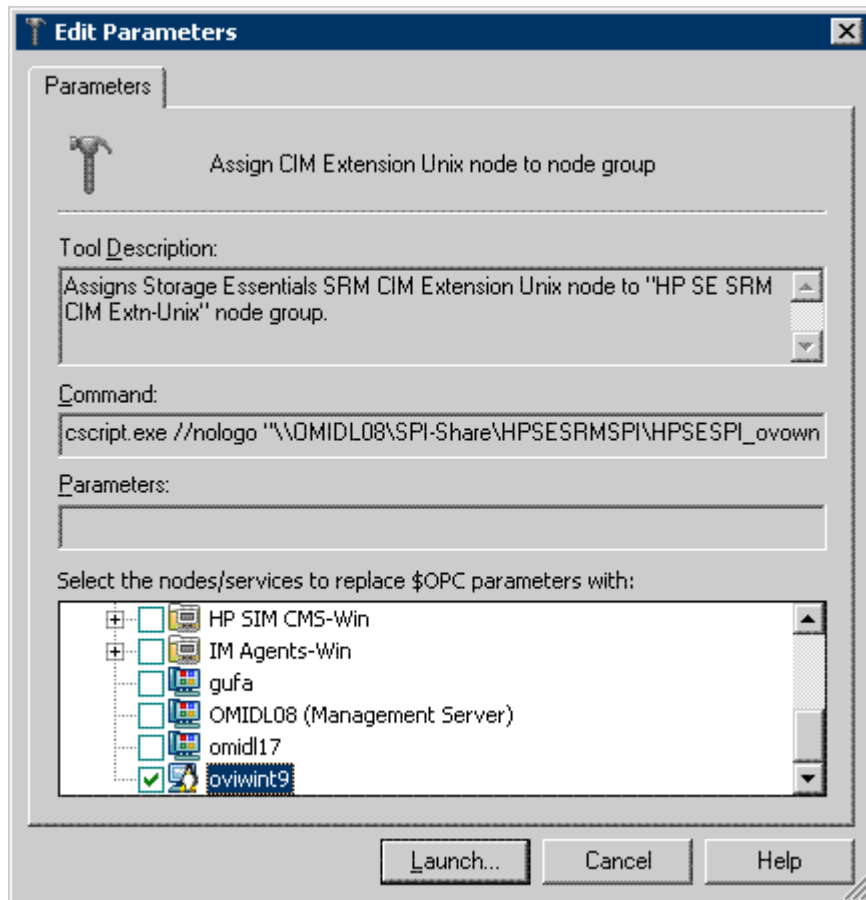
The automatic policy deployment requires that the HPOM agent be present on the managed nodes. If the HPOM agent is not present on the Windows nodes, the management server deploys the agent automatically. For UNIX nodes, the agent must be installed manually. You can install the HPOM agent by various methods. For more information, see *HP Operations Manager for Windows Installation Guide*.

6 Assign the CIM Extension Node to the Node Group.

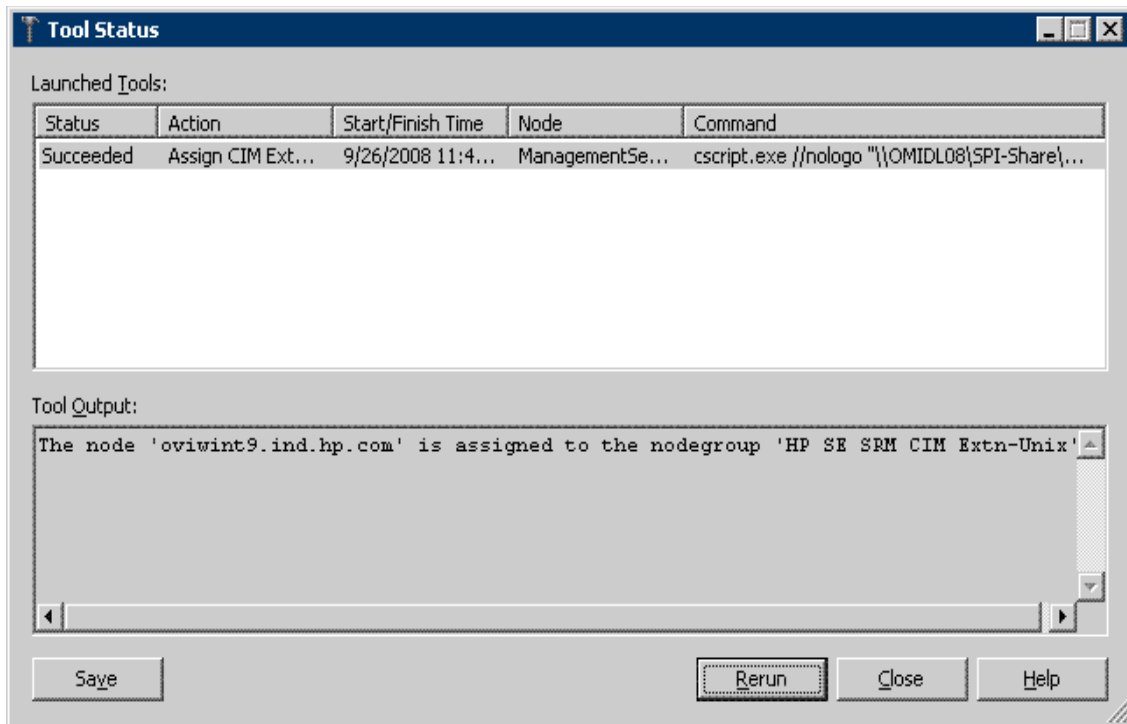
To assign the node on which the SE SRM CIM Extension process is running to the node group, follow these steps:

- 1 Log on to the HPOM management server and start the HPOM Console.

- 2 Select **Tools > HP Storage Essentials SRM > CIM Extension-Unix or CIM Extension-Win** and right-click **Assign CIM Extension node to node group**.
- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 4 From the **Select the nodes/services to replace \$OPC parameters with**, select the node on which the SE SRM CIM Extension process is running.
- 5 Click **Launch....** The Tool Status window opens.



This assigns the node on which the SE SRM CIM Extension process is running to the HP SE SRM CIM Extn-Unix *or* HP SE SRM CIM Extn-Win node group.



When the new nodes are added in the HP SE SRM CIM Extn-Unix or HP SE SRM CIM Extn-Win node group, the Service Discovery policy is deployed to each new node.

Assigning the HP SE SRM CIM Extension node to the node group also invokes auto-deployment of the HP SE SRM CIM Extension Service Monitoring policy to the node.

Task 3: Obtain HP SE SRM Credentials

To start the functionality provided with the HP Storage Essentials SRM SPI, you must first enter the HP SIM credentials for each HP SE SRM CMS.

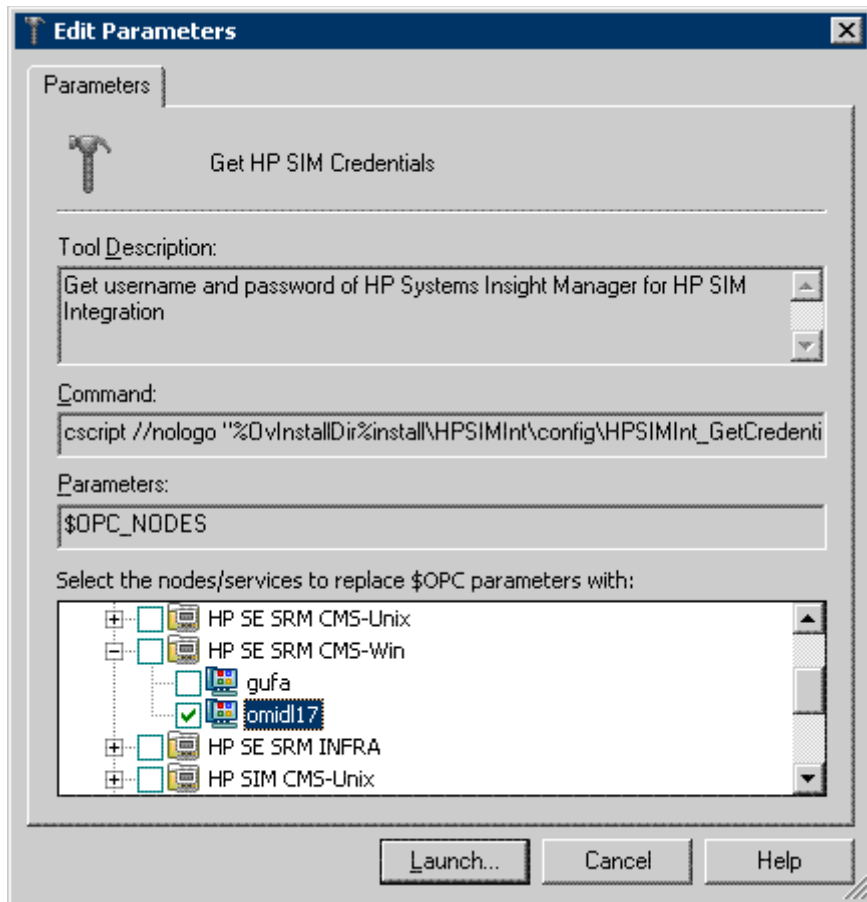


Enter the same credential that is used to log on to HP Systems Insight Manager. The HP SIM credentials used must have the role `Domain_Admin` in SE SRM CMS for the HP Storage Essentials SRM SPI to function correctly. HP SIM credentials are stored in an encrypted format on the HPOM managed nodes.

To obtain HP Storage Essentials SRM SPI credentials, follow these steps:

- 1 Log on to the HPOM management server and start the HPOM Console.
- 2 Select **Tools > HP Storage Essentials SRM > HPSESRMSPi Utils** and right-click **Get HP SIM Credentials**.

- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 4 From the **Select the nodes/services to replace \$OPC parameter with** option, select the node on which HP SIM CMS is running.
- 5 Click **Launch**. The following message is displayed if the selected node is HP SE CMS on UNIX:

Enter the HP Systems Insight Manager username:

The following message is displayed if the selected node is HP SE CMS on Windows:

Enter the HP Systems Insight Manager DOMAIN\username:

- 6 At the prompt, enter the HP Systems Insight Manager user name for HP SE CMS on this node and press **Enter**. The following message is displayed at the prompt:

Enter the HP Systems Insight Manager password:

- 7 Enter the corresponding HP Systems Insight Manager password and press **Enter**.
- 8 Re-enter the password to confirm. The following message appears:

Done creating hpsecms.conf file.
Press any key to continue . . .

The tool attempts to verify the user name and password. At the prompt, press **Enter** to exit.

If the credentials entered are not authenticated by HP SE SRM, the following message is displayed:

Failed to validate the HP SE CMS credentials. Possible causes could be:
1. HP SE SRM CMS is not installed
2. HP SE SRM CMS service is not running
3. HP SE SRM CMS credentials incorrect
Press any key to continue . . .

- 9 Press **Enter**. The command prompt window closes.



After successful execution, the hpsecms.conf file is created on the HP SE SRM CMS node.

The credentials are used for HP SE SRM service discovery.



Service Discovery does not function correctly if the user name and password are incorrect. If you do not know the user name and password, contact your system administrator.

Task 4: Import HP SE SRM Infrastructure

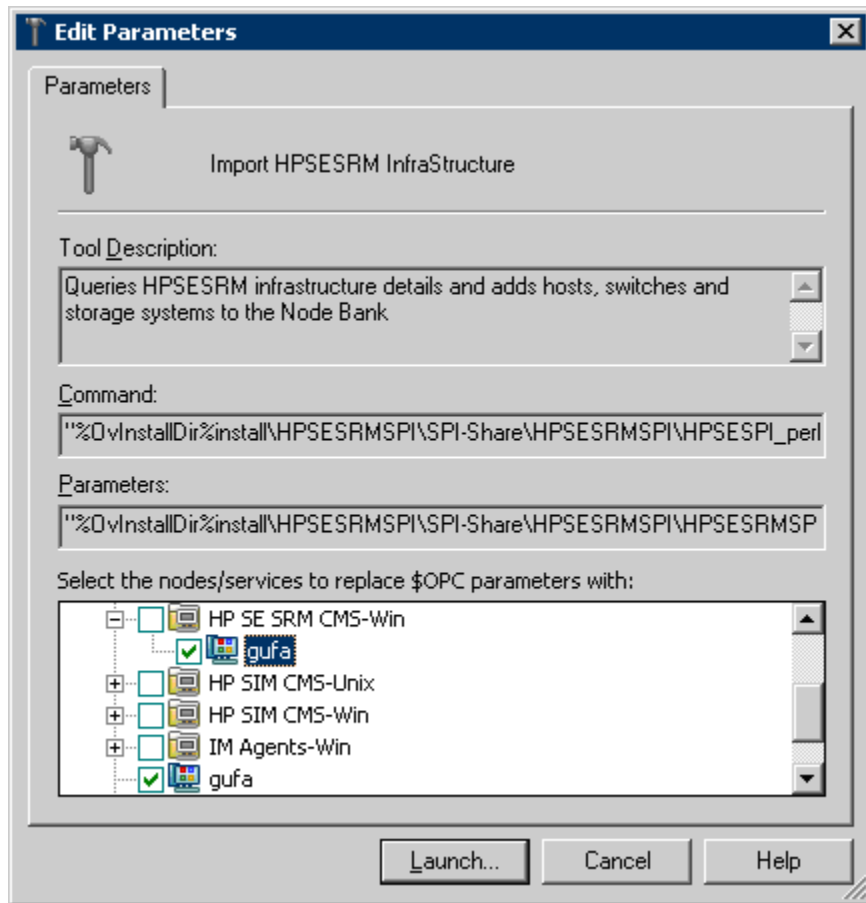
To get events from the HP SE SRM devices, you must import the infrastructure for each of the HP SE SRM CMS. To import the HP SE SRM Infrastructure, follow the below mentioned steps.

- 1 Log on to the HPOM Management Server and start the HPOM Console.
- 2 Select **Tools > HP Storage Essentials SRM > HPSESRMSPI Utils** and right click **Import HPSESRM Infrastructure**



This tool can be executed only on HTTPS agent nodes.

- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.
- 4 From the **Select the nodes/services to replace \$OPC parameters with** option, select the node on which the HP SE SRM CMS is running.

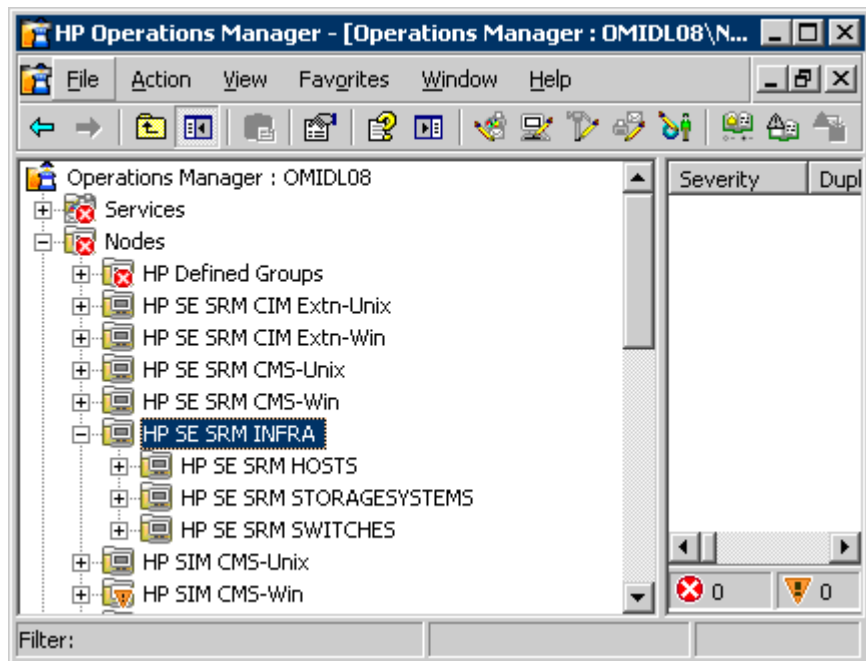


- 5 Click **Launch**. This will add all the Hosts, Switches and Storage Systems to the Node Bank

```
C:\WINDOWS\system32\cmd.exe
Adding Node Group HP SE SRM HOSTS : Successful!
Adding Node cetus.rose.hp.com : Successful!
Adding Node hawthorn.rose.hp.com : Successful!
Adding Node gtest81.rose.hp.com : Successful!
Adding Node didicas.rose.hp.com : Successful!
Adding Node tucana.rose.hp.com : Successful!
Adding Node papaya.rose.hp.com : Successful!
Adding Node ovruxr21.rose.hp.com : Successful!
Adding Node ovr.sunr1.rose.hp.com : Successful!
Adding Node cotopaxi.rose.hp.com : Successful!
Adding Node Group HP SE SRM SWITCHES : Successful!
Adding Node ghizo : Successful!
Adding Node sanmgr23 : Successful!
Adding Node sanmgr22 : Successful!
Adding Node nt-ernie-switch1 : Successful!
Adding Node sanmgr11 : Successful!
Adding Node sanmgr39 : Successful!
Adding Node davidof : Successful!
Adding Node spinel : Successful!
Adding Node puffer : Successful!
Adding Node mackerel : Successful!
Adding Node rayong : Successful!
Adding Node dubbi : Successful!
Adding Node biak : Successful!
Adding Node akun : Successful!
Adding Node sanmgr1 : Successful!
Adding Node sanmgr38 : Successful!
```

- 6 Click **Enter** and the command prompt window closes.

Now the HP SE SRM Infrastructure (Hosts, Switches and Storage Systems) is added to the OM Node Bank under the Node Group **HP SE SRM INFRA** with the following sub groups.



- HP SE SRM HOSTS
- HP SE SRM SWITCHES
- HP SE SRM STORAGESYSTEMS



To delete the HPSESRMSPI Infrastructure node groups and the nodes that they contain, execute the following steps:

- 1 Open the Node Configuration Editor.
- 2 On the right pane , right click on HP SE SRM INFRA node group and click on Delete.
- 3 A Confirm Delete window opens , click on Yes.

Task 5: Configure the OM Agent for a Non-root User

For information on configuring the OM agent to run as a non-root user, see the *HP Operations HTTPS Agent Concepts and Configuration Guide*.

To configure non-root agents, follow these steps:

- 1 Log on to the managed node as a root user and open a terminal window.
- 2 Open the following instrumentation directory for HTTPS node:

```
cd /var/opt/OV/bin/instrumentation
```

- 3 Enter the following command at the command prompt:

```
./HPSESPI_perl HPSESPI_root.pl.
```

This command generates the HPSESPI.su file.

The following message is displayed on successful execution of the command:

```
The script has completed successfully.
```

The HP Storage Essentials SRM SPI does not support a non-root HPOM agent on AIX and Tru64 CIM Extension nodes.

Providing Access to HP Storage Essentials SRM SPI Applications

To provide access to HP Storage Essentials SRM SPI applications, follow these steps:

- 1 Log on to the managed node as a root user, and open a terminal window.
- 2 Open the following file:

```
/etc/HPSESPI.su
```

- 3 Edit the file by uncommenting lines or by adding the following:

```
root:$CIMExtPath/APPQcime/tools/start
root:$CIMExtPath/APPQcime/tools/stop
root:$CIMExtPath/APPQcime/tools/status
root:/etc/init.d/appstormanager start
root:/etc/init.d/appstormanager stop
```

On HP-UX and Linux, the \$CIMExtPath is /opt

On Solaris, enter the following command to get the value for \$CIMExtPath:

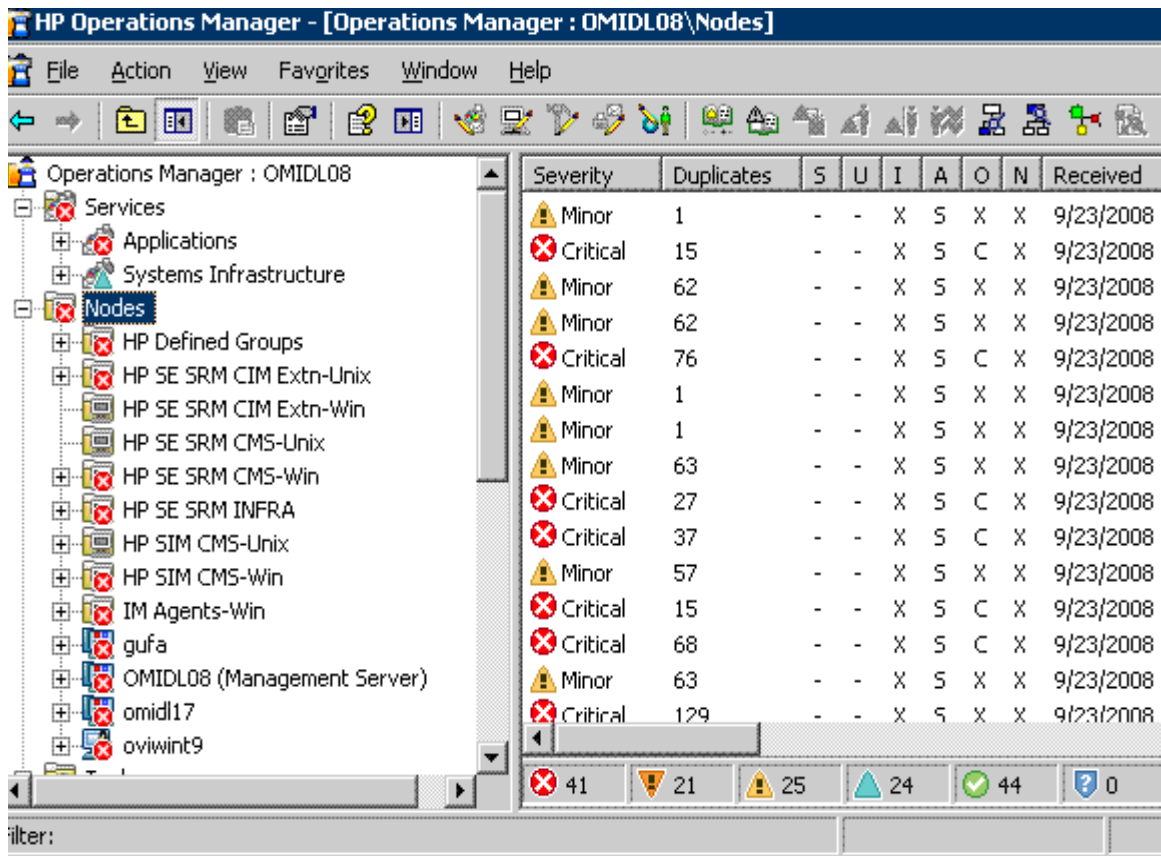
```
/usr/bin/pkginfo -r APPQcime
```

4 Using the HP Storage Essentials SRM SPI

Using the HP Storage Essentials SRM SPI Node Group

Installing the HP Storage Essentials SRM SPI creates the following node groups (shown in the figure that follows):

- HP SE SRM CMS-Unix
- HP SE SRM CMS-Win
- HP SE SRM CIM Extn-Unix
- HP SE SRM CIM Extn-Win



You can find more information about adding nodes in [Task 2: Assign Nodes to the HP SE SRM Node Group](#) on page 25.

Node folders and tool folders are associated as follows:

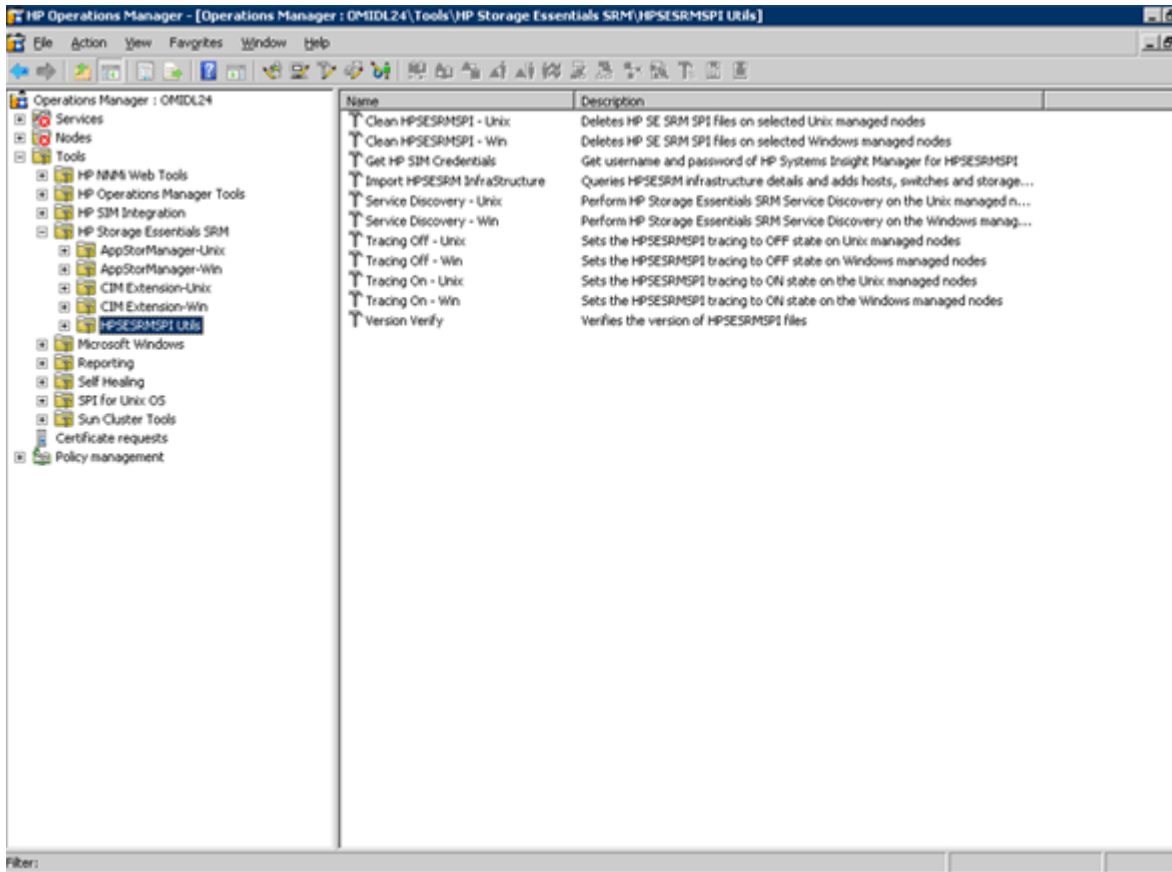
Table 9 Association between nodes folder and tools folder

Nodes Folder	Tools Folder
HP SE SRM CMS-Unix	AppStorManager-Unix
HP SE SRM CMS-Win	AppStorManager-Win
HP SE SRM CIM Extn-Unix	CIM Extension-Unix
HP SE SRM CIM Extn-Win	CIM Extension-Win

Using HP Storage Essentials SRM SPI Tools

The HP Storage Essentials SRM SPI adds the top-level tools group in the HPOM Application bank window. The HP SE SRM tools group contains the following tools (shown in the figure that follows):

- AppStorManager-Unix
- AppStorManager-Win
- CIM Extension-Unix
- CIM Extension-Win
- HPSESRMSPI Utils



The HP Storage Essentials SRM SPI tool folders contain a number of tools that enable the HPOM administrator to manage HP SE SRM.

The **AppStorManager-Unix** or **AppStorManager-Win** tools group contains tools that can be run on HP SE CMS nodes (UNIX or Windows).

Using the AppStorManager Tools Group

The **AppStorManager-Unix** or **AppStorManager-Win** tools group includes tools for HP SE SRM AppStorManager that are run on HP SE CMS server nodes.

The AppStorManager tools group includes the following tools that monitor the HP SE SRM AppStorManager process on selected UNIX or Windows nodes.

Table 10 Name of tools which monitor the HP SE SRM AppStorManager process

Tools Group	Tool Name	Description
AppStorManager-Unix	AppStorManager-Unix Start	Starts the HP SE SRM AppStorManager service on selected Unix nodes.
	AppStorManager-Unix Status	Status of HP SE SRM AppStorManager service on selected Unix nodes.
	AppStorManager-Unix Stop	Stops the HP SE SRM AppStorManager service on selected Unix nodes.
	Assign AppStorManager Unix node to node group	Assigns Storage Essentials SRM AppStorManager Unix node to \"HP SE SRM CMS-Unix\" node group.
	De-assign AppStorManager Unix node from node group	De-assign AppStorManager Unix node from node group.

Tools Group	Tool Name	Description
AppStorManager-Win	AppStorManager-Win Start	Starts the HP SE SRM AppStorManager service on selected Windows nodes.
	AppStorManager-Win Status	Status of the HP SE SRM AppStorManager service on selected Windows nodes.
	AppStorManager-Win Stop	Stops the HP SE SRM AppStorManager service on selected Windows nodes.
	Assign AppStorManager Windows node to node group	Assigns the Storage Essentials SRM AppStorManager Windows node to \"HP SE SRM CMS-Win\" node group.
	De-assign AppStorManager Windows node from node group	De-assigns Storage Essentials SRM AppStorManager Windows node from \"HP SE SRM CMS-Win\" node group.

Using CIM Extension Tools Group

The CIM Extension-Unix *or* CIM Extension-Win tools group includes the following tools for HP SE SRM CIM Extension that are run on the HP SE SRM CIM Extension nodes (UNIX *or* Windows). The CIM Extension tools group includes the tools that monitor HP SE SRM CIM Extension services on the selected UNIX *or* Windows nodes.

Table 11 Name of the tools which monitor HP SE SRM CIM Extension services

Tools Group	Tool Name	Description
CIM Extension-Unix	CIM Extension-Unix Start	Starts HP SE SRM CIM Extension on selected UNIX nodes
	CIM Extension-Unix Status	Status of the HP SE SRM CIM Extension on selected UNIX nodes.
	CIM Extension-Unix Stop	Stops HP SE SRM CIM Extension on selected UNIX nodes.
	Assign CIM Extension Unix node to node group	Assigns Storage Essentials SRM CIM Extension Unix node to \"HP SE SRM CIM Extn-Unix\" node group.
	De-assign CIM Extension Unix node from node group	De-assigns Storage Essentials SRM CIM Extension Unix node from \"HP SE SRM CIM Extn-Unix\" node group.

Tools Group	Tool Name	Description
CIM Extension-Win	CIM Extension-Win Start	Starts the HP SE SRM CIM Extension on selected Windows nodes.
	CIM Extension-Win Status	Gets the status of HP SE SRM CIM Extension on selected Windows nodes.
	CIM Extension-Win Stop	Stops the HP SE SRM CIM Extension on selected Windows nodes
	Assign CIM Extension Windows node to node group	Assigns Storage Essentials SRM CIM Extension Windows node to \"HP SE SRM CIM Extn-Win\" node group.
	De-assign CIM Extension Windows node from node group	De-assigns Storage Essentials SRM CIM Extension Windows node from \"HP SE SRM CIM Extn-Win\" node group.

Using the HPSESRMSPI Utils Tools Group

The HPSESRMSPI Utils tools group includes the following tools for performing administrative tasks for the HP Storage Essentials SRM SPI.

Table 12 Name of the tools used for performing administrative tasks for the HP Storage Essentials SRM SPI

Tools Name	Description
Clean HPSESRMSPI–Unix	Deletes HP SE SRM SPI files on selected Unix managed nodes
Clean HPSESRMSPI–Win	Deletes HP SE SRM SPI files on selected Windows managed nodes
Get HP SIM Credentials	Get username and password of HP Systems Insight Manager for HPSESRMSPI.

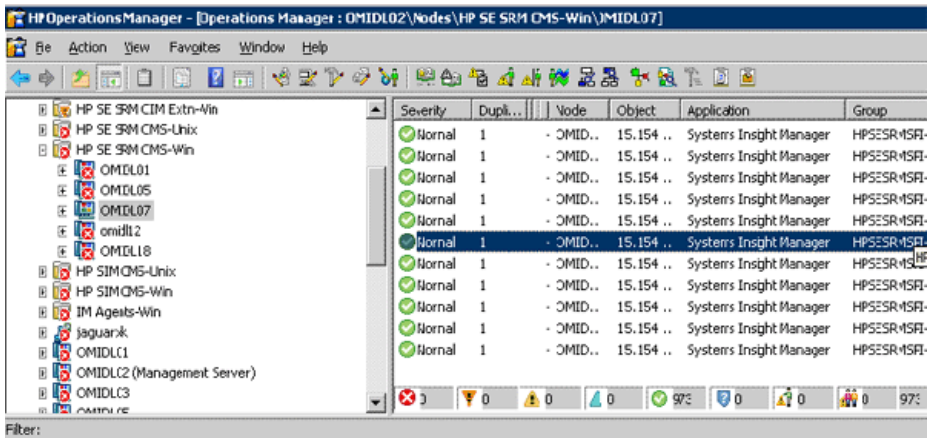
Tools Name	Description
Service Discovery–Unix	Performs HP SE SRM Service Discovery on the UNIX managed nodes.
Service Discovery–Win	Performs HP SE SRM Service Discovery on the Windows managed nodes.
Tracing Off–Unix	Sets HPSESRMSPI tracing to OFF state on UNIX managed nodes.
Tracing Off–Win	Sets HPSESRMSPI tracing to OFF state on Windows managed nodes.
Tracing On–Unix	Sets HP Storage Essentials SRM SPI tracing to ON state on the UNIX managed nodes.
Tracing On–Win	Sets HP Storage Essentials SRM SPI tracing to ON state on the Windows managed nodes.
Version Verify	Verifies the version of HP Storage Essentials SRM SPI files.
Import HPSESRM Infrastructure	<p>Queries the HPSESRM Infrastructure details and adds Hosts, Switches and Storage Systems to the Node Bank.</p> <p>Note: Get HP SIM Credentials" tool must be executed before running this tool</p>

Using HP Storage Essentials SRM SPI messages

Events generated by the HP Storage Essentials SRM SPI are grouped under the HP Storage Essentials SRM SPI's HPSESRMSPI-StorageEssentials_SRM message group. The messages generated by the HP Storage Essentials SRM SPI policies appear in the message browser window and contain information that is vital for understanding the problems being reported.



The figure below shows messages for the HP Storage Essentials SRM SPI.



The message headline describes the scope of the problem. In the HP Storage Essentials SRM SPI context, this information can be categorized into the following:

- **Node** – Name of the Event source device
- **Application** – Systems Insight Manager
- **Text** – A single line description of the event.

- **Object** – CIM CMS Server
- **Group** – HPSESRMSPI-StorageEssentials_SRM

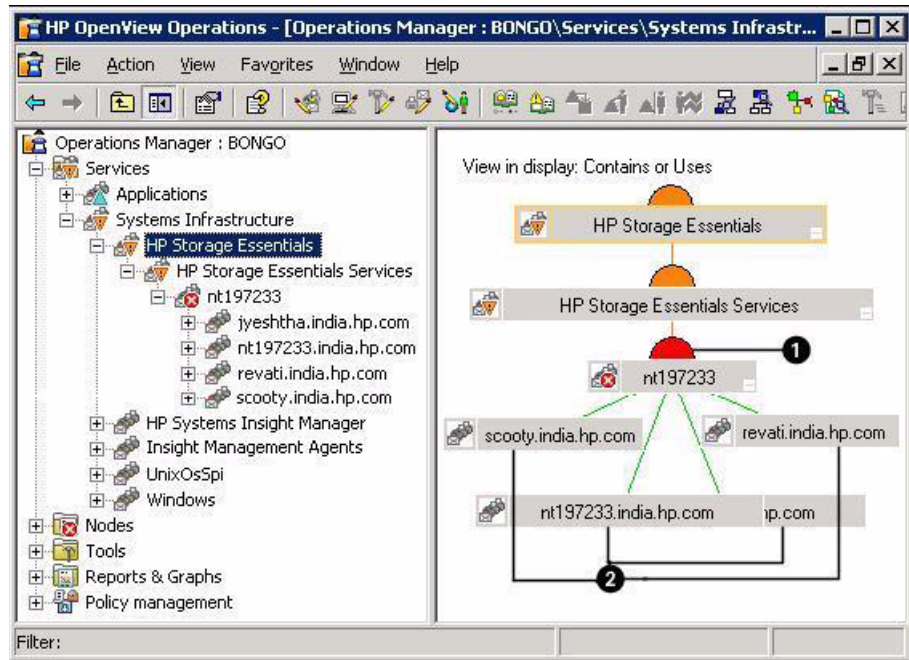
Using the HP Storage Essentials SRM SPI Service Map

The HP Storage Essentials SRM SPI provides the administrator with the additional perspective of service views. It discovers the services automatically and uses the discovered data to generate service maps that can be viewed by the administrator from the HPOM console.

The HP SE SRM managed hosts are discovered by querying the SE SRM CMS for its managed hosts. Therefore, some of the nodes represented in this tree may not be HPOM managed nodes. Status is shown only for CIM Extension nodes that have an HPOM Agent installed and the HP Storage Essentials SRM SPI configured.

You can decide whether these nodes must be configured as HPOM managed nodes or not. You can also decide whether the HP Storage Essentials SRM SPI policies must be installed or not. If the nodes in this tree are HPOM managed nodes with the HP Storage Essentials SRM SPI policies deployed, the service view node status changes based on the status of the CIM Extension on the node is displayed.

The following service map shows the status of the HP SE AppStorManager process.



The service status implications of the service map are the following:

Table 13 Service status implications of the service map

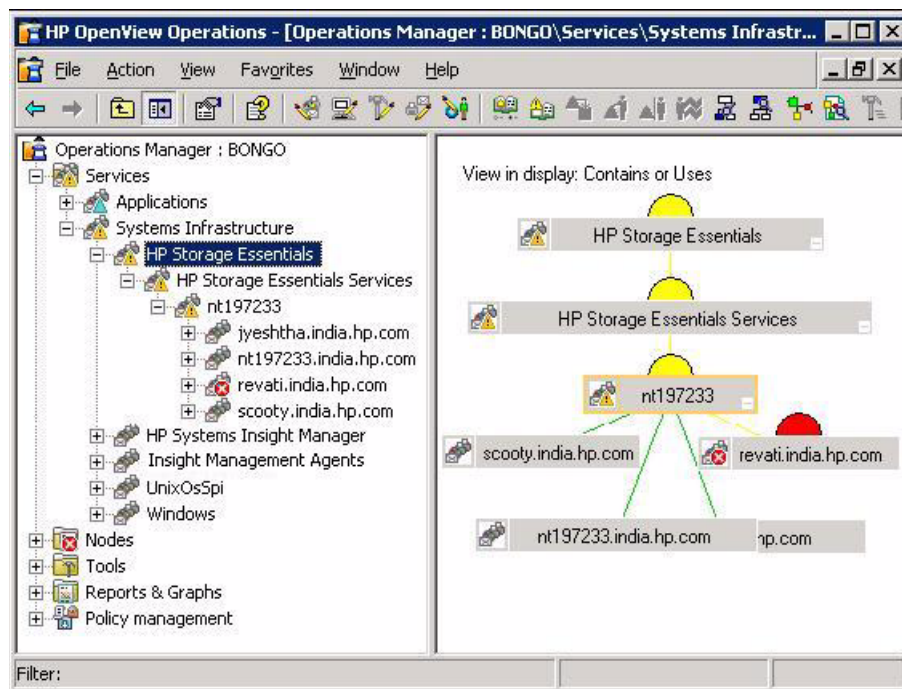
Item	Description
1	SE SRM CMS node
2	Nodes with CIM Extensions installed or running

► By default, status propagation rules for the objects in the HP SE SRM service tree are defined such that if the HP SE SRM CIM Extension service objects is critical (item 2 in the previous figure), the higher service objects status are decreased by two levels to minor.

If the HP SE SRM AppStorManager service objects is critical (item 1 in the previous figure), the higher service objects status are decreased by a level to major.

The parent service does not change the status of a child object and, by default, calculation rules for the HP SE SRM service trees are set to Most Critical. Therefore, if a parent service has more than one child service, the parent service assumes the status equal to the highest severity of its child services.

The following service map shows that the CIM Extension service on the node highlighted in red is not running.



The service discovered by the HP Storage Essentials SRM SPI enables root-cause analysis of problems in crucial elements on the CIM Extension node in an HP SE SRM network managed storage network.

Viewing Services

The service views are created after HP SE SRM CMS node is added to the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group, and service discovery is invoked. For information on adding SE SRM CMS to the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group, see [Task 2: Assign Nodes to the HP SE SRM Node Group](#) on page 25.

Running the appropriate Service Discovery tool on the SE CMS node generates services in the HP SE SRM service map. Make sure that you perform the steps described in [Task 3: Obtain HP SE SRM Credentials](#) on page 31 before performing the following steps for viewing the discovered HP SE SRM service.

To view the discovered HP SE SRM service, follow these steps:

- 1 Log on to the HPOM management server, and start the HPOM console.
- 2 Select **Services > System Infrastructure** on the left pane of the HPOM console. The HP SE SRM service map is displayed in the right pane, as shown on [page 54](#).



By default, the HP Storage Essentials SRM SPI service discovery policy is configured to run service discovery every day at 2:00 am. You can change the service discovery period by modifying the Service discovery policy. The changed discovery period comes into effect only after the policies are redeployed on the HP SE SRM CMS node.

Importing SE Infrastructure into OM NodeBank.

In the present scenerio, all events are generated from the SE managed Devices mapped to the SIM CMS.. To correctly map all the events to the devices we have to add the nodes to OM Nodebank. SE managed nodes are queried and added to the OM Node Bank as message nodes.

When the events reach the OM from SIM CMS Server, the events are mapped to SE Managed Nodes instead of SE CMS Server.

Information about the SE Infrastructure is collected from the SE Discovery Database. The following device types in SE are collected and added to OM Node bank.

- Hosts
- Switches
- Storage Systems

In OM for Windows, these mesages are added as external nodes in the OM Node Bank.

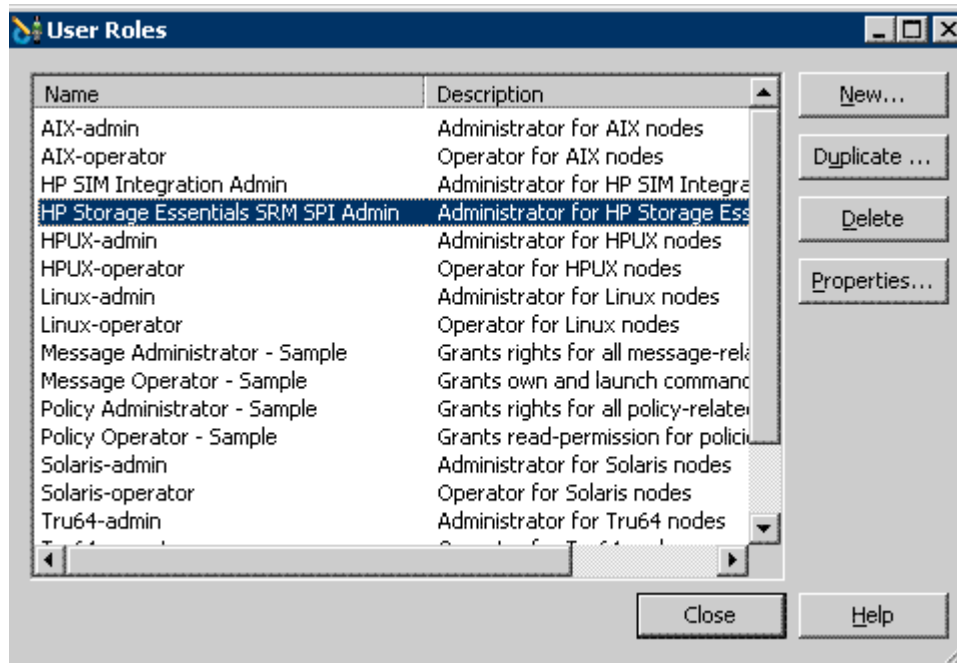
In OM for Unix, these messages arwe added as “Message Allowed Node” in the OM Node bank.

A new node group called HP SE SRM INFRA is added to add the all the created nodes. These nodes are added to sub-groups which we must create. These sub-groups are:

- HP SE SRM INFRA HOSTS,
- HP SE SRM INFRA SWITCHES
- HP SE SRM INFRA STORAGE SYSTEMS

Using HP Storage Essentials SRM SPI User Roles

The installation of the HP Storage Essentials SRM SPI adds a new user role, HP Storage Essentials SRM SPI Admin, to HPOM as shown in the following figure.



The HPOM administrator uses user roles to simplify the process of assigning responsibilities to HPOM users. The users associated with the role HP Storage Essentials SRM SPI Admin can access all the HP Storage Essentials SRM SPI tools, policies, and HPSESRMSPI-StorageEssentials_SRM message groups assigned to them, and can manage and control the HP SE SRM CMS and HP SE SRM CIM Extension nodes.

The HP Storage Essentials SRM SPI Admin user role assigns the following authorizations:

- Access all messages with message group attribute HPSESRMSPI-StorageEssentials_SRM from HP SE SRM CMS or HP SE SRM CIM Extension node.

- Execute any tool in the HP Storage Essentials SRM Tools groups.
- Update the HPOM service map, displaying the HP SE SRM services successfully discovered.

5 Uninstalling the HP Storage Essentials SRM SPI

Deleting HP Storage Essentials SRM SPI Instrumentation from Nodes

To remove HP Storage Essentials SRM SPI instrumentation from the managed nodes, follow these steps:

- 1 Open the HPSESRMSPI Utils tools group in the HP Storage Essentials SRM SPI tools group.
- 2 Run the Clean HPSESRMSPI-Unix tool on the selected Unix managed nodes.
- 3 Run the Clean HPSESRMSPI- Win tool on the selected Windows managed nodes.

Removing Nodes from the Node Group

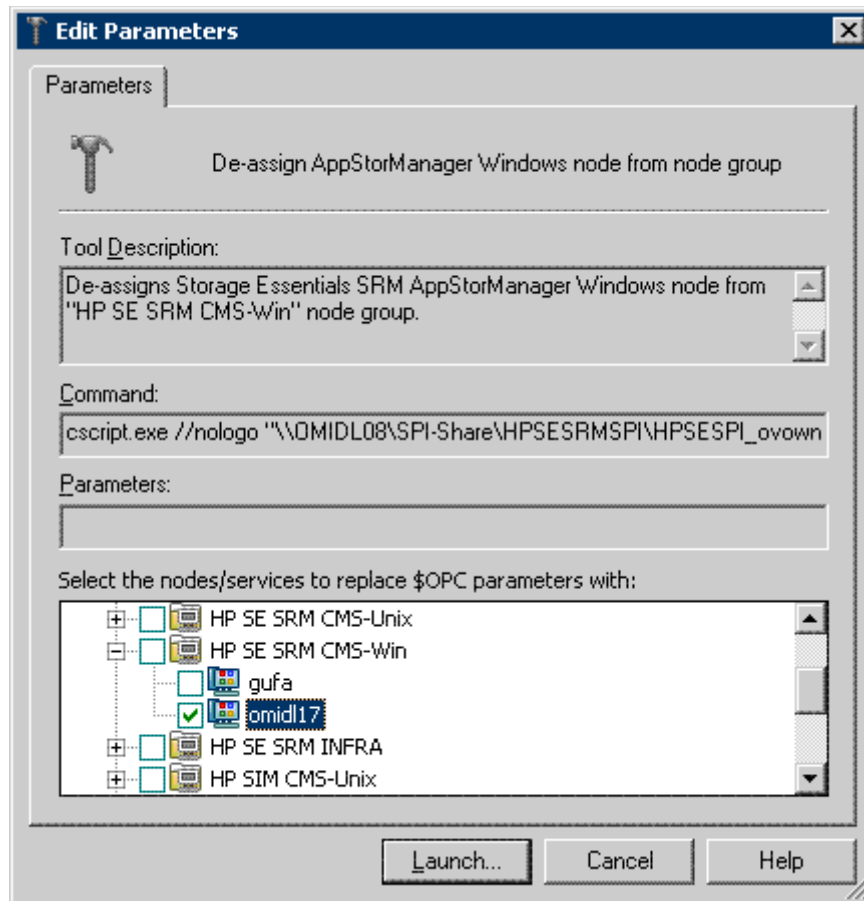
Removing a node from the node group involves the following tasks.

Task 1: Remove the AppStorManager Node from the Node Group

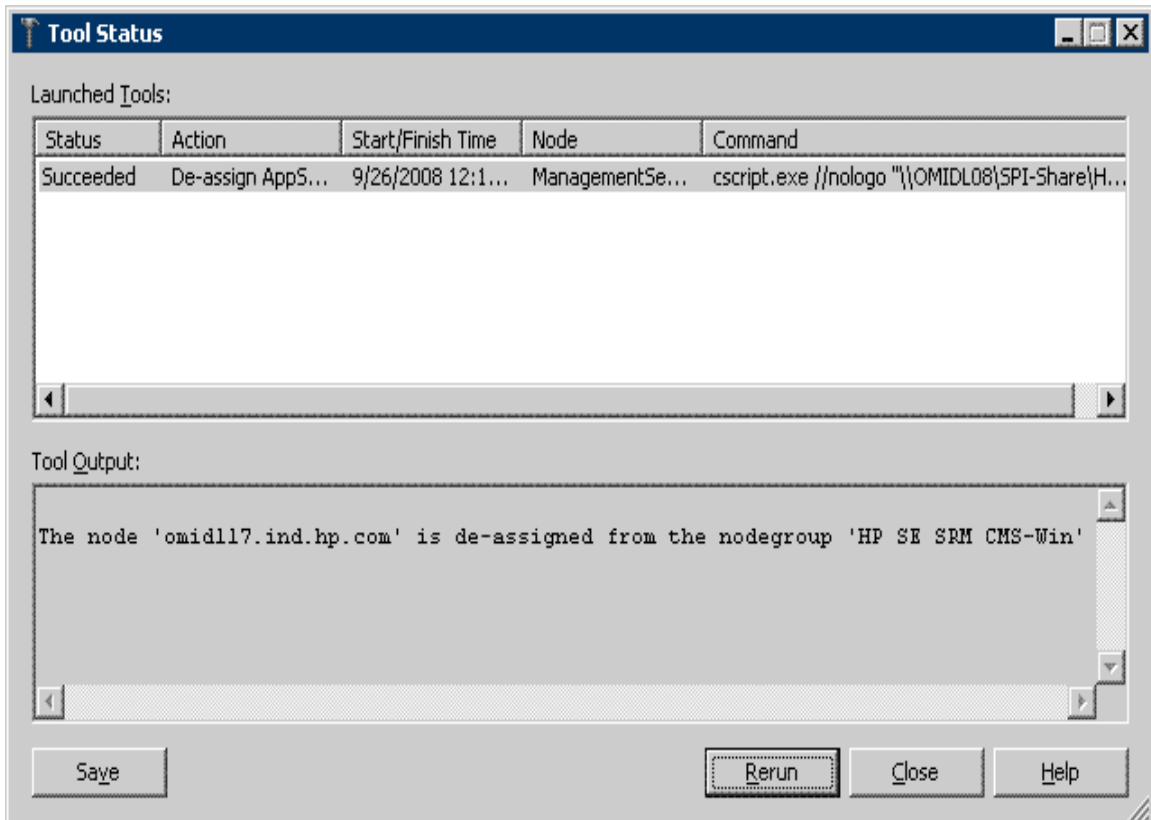
To remove the node on which the HP SE SRM AppStorManager service is running from the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group, follow these steps:

- 1 Log on to the HPOM management server, and start the HPOM Console.
- 2 Select **Tools > HP Storage Essentials SRM > AppStorManager-Unix** and right-click **De-assign AppStorManager node from node group**.

- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 4 Select the node in the **HP SE SRM CMS-Win** node group in the **Select the nodes/services to replace \$OPC parameter with** window pane.
- 5 Click **Launch....** The Tool Status window opens.



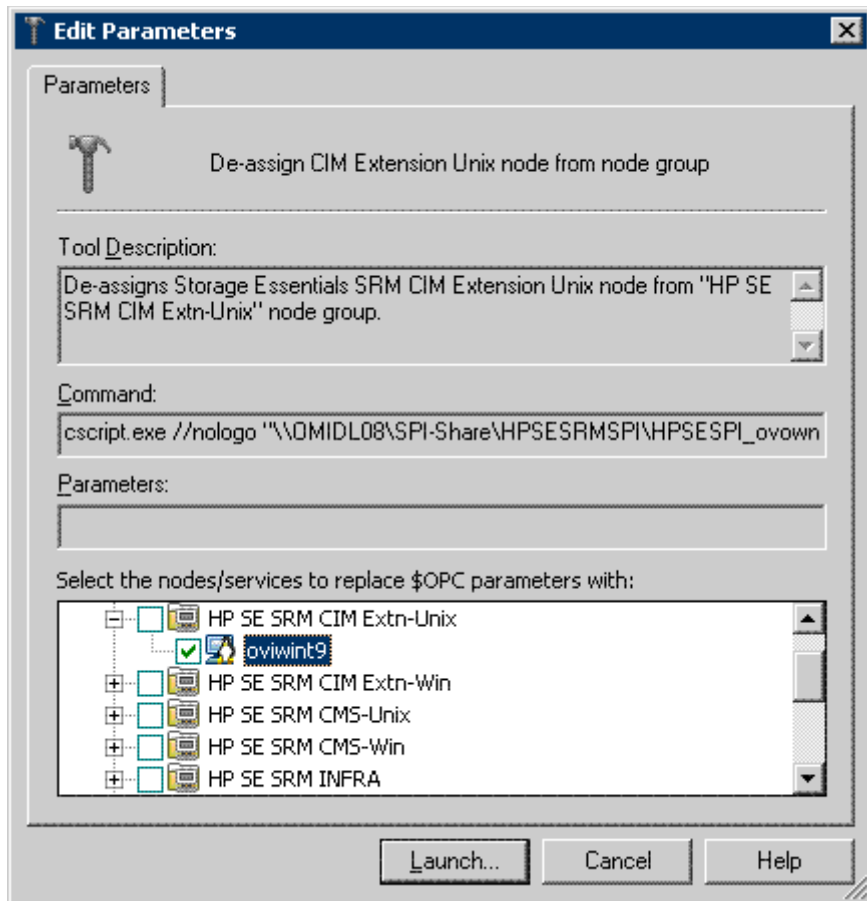
- 6 Repeat the previous steps to remove nodes from the HP SE SRM CMS-Win node groups using **Tools > HP Storage Essentials SRM > AppStorManager-Win > De-assign AppStorManager Win node from node group**.

Task 2: Remove the CIM Extension Windows Node from the Node Group

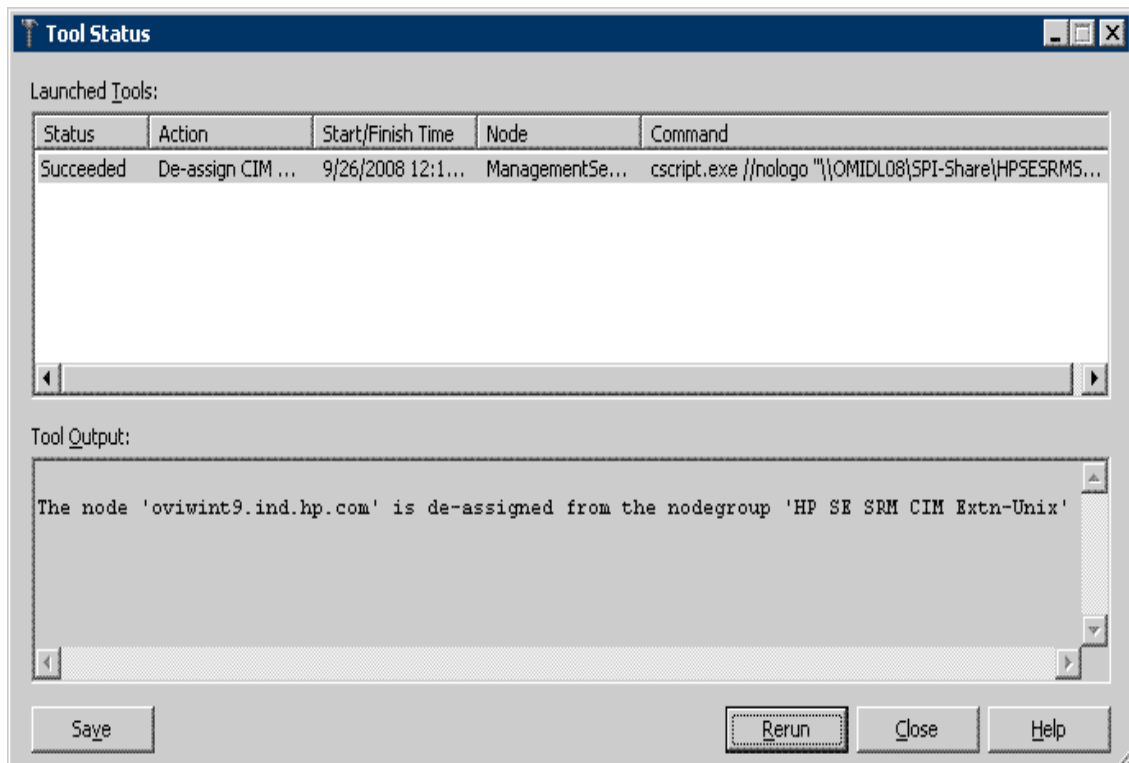
To remove the node on which the HP SE SRM CIM Extension service is running, from the HP SE SRM CIM Extn-Unix or HP SE SRM CIM Extn-Win node group, follow these steps:

- 1 Select **Tools > HP Storage Essentials SRM > CIM Extension-Unix**, and right-click **De-assign CIM Extension Windows node from node group**.

- 2 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 3 Select the node in the HP SE SRM CIM Extn-Unix node group in the **Select the nodes/services to replace \$OPC parameters with** window pane.
- 4 Click **Launch....** The Tool Status window opens.



- 5 Repeat the previous steps to remove nodes from the HP SE SRM CIM Extension-Win node groups using the **Tools > HP StorageEssentials SRM > CIM Extension-Win > De-assign CIM Extension-Win node from node group**.



The nodes in the SE INFRA Node Group are not SOM managed nodes and hence do not have to be removed from their node groups. Uninstalling the SE SRM SPI will automatically remove the SE INFRA Nodes and their node groups.

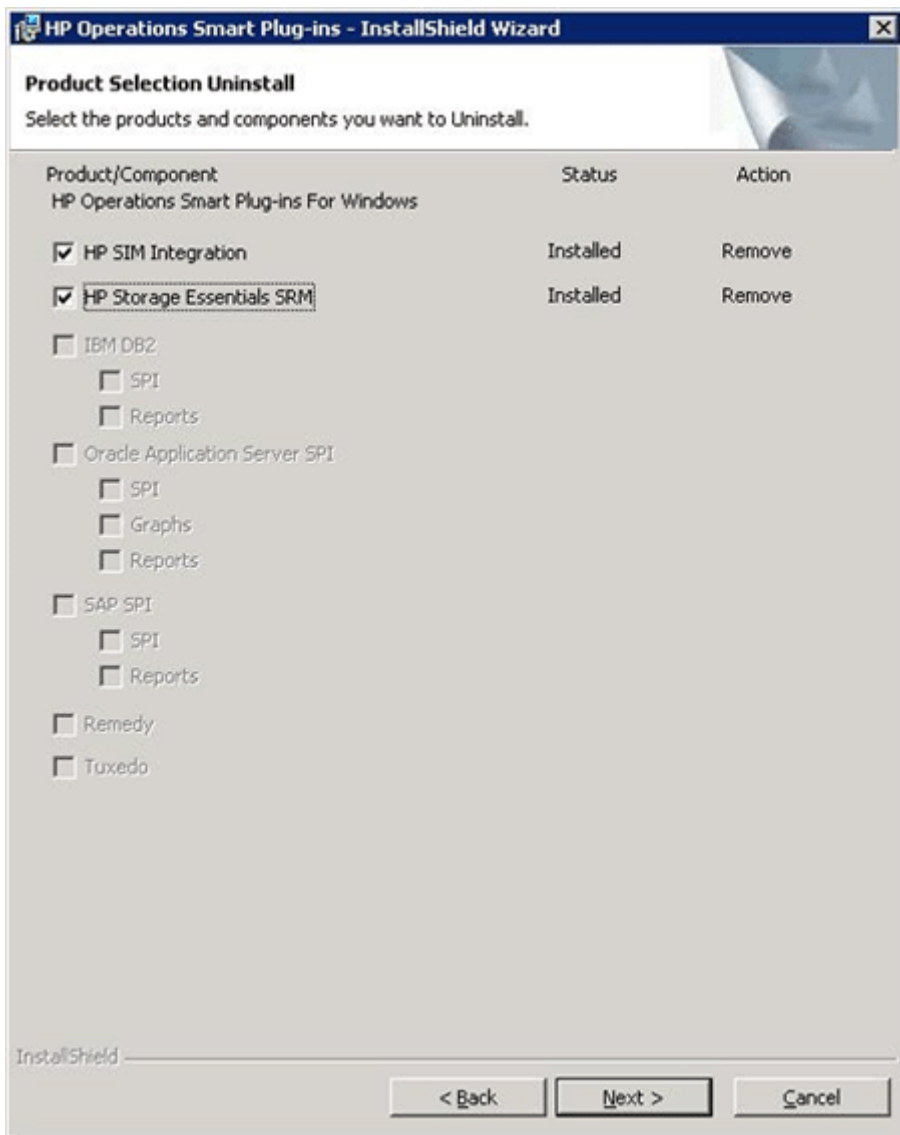
Uninstalling HP Storage Essentials SRM SPI from HPOM

To uninstall the HP Storage Essentials SRM SPI components from HPOM, follow these steps:



Make sure that HPOM managed nodes are not present under the HP Storage Essentials SRM SPI node groups. They must be moved out of their respective groups before uninstalling the HP Storage Essentials SRM SPI. For information on removing the HPOM managed nodes, see [Removing Nodes from the Node Group](#) on page 59.

- 1 Insert the HP Operations Smart Plug-ins DVD, Installation and Upgrade Guide.
- 2 Select **Remove products** to proceed to the product selection dialog box.
- 3 In the Product Selection Uninstall window, select **SPI for HP SE SRM** and click **Next**. The Product Selection Uninstall window opens.





Selecting **HP SIM Integration** in the Product Selection Uninstall window also uninstalls the HP Storage Essentials SRM SPI.

4 Select **Remove**.

5 Click **Finish** to complete the uninstallation procedure and exit the wizard.

This removes all the configuration files and executables of the HP Storage Essentials SRM SPI from the HPOM server. The HP Storage Essentials SRM SPI node groups, policies, and tools are also removed from the HPOM.

For more information on uninstalling HP Operations New and Upgraded Smart Plug-ins, see the *HP Operations Smart Plug-ins DVD, Installation and Upgrade Guide*.

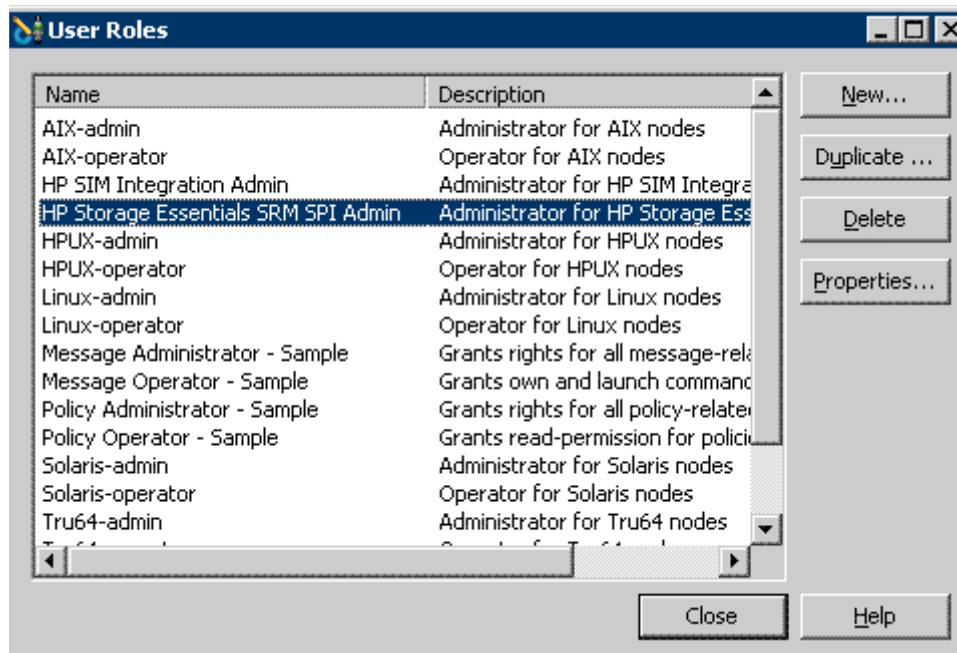
Uninstalling HP Storage Essentials SRM SPI Components from HPOM

Most of the components of the HP Storage Essentials SRM SPI in HPOM are automatically removed during the uninstallation of the product. However, the HP Storage Essentials SRM SPI Admin user role must be removed manually.

Removing HP Storage Essentials SRM SPI User Roles

To remove the HP Storage Essentials SRM SPI user roles, follow these steps:

- 1 Select **Actions > Configure > User Roles**. You can also click **User Roles Configuration Editor**, which is located on the menu bar of the main HPOM. The User Roles window opens.



- 2 Select **HP Storage Essentials SRM SPI Admin**, and click **Delete**.

6 Troubleshooting

Start by checking the following to verify that the HP Storage Essentials SRM SPI environment is installed and configured correctly:

- Make sure that the HP Storage Essentials SRM SPI is installed properly. For more information, see [Installing the HP Storage Essentials SRM SPI](#) on page 18.
- Make sure that the HP Storage Essentials SRM SPI is configured properly. For more information, see [Chapter 3, Configuring the HP Storage Essentials SRM SPI](#).

If the HP Storage Essentials SRM SPI is correctly installed and configured, the messages appearing in the HPOM message browser will be intercepted by the HP Storage Essentials SRM SPI policies and will appear in the HPOM message browser in the form you expect.

If the problem persists, refer to the following list of common problems and their solutions.

Error Messages and Solutions

No HP SE SRM service monitoring events arrive on the HPOM Message Browser console

Solution:

- Make sure that the connection between HPOM and the HP SE SRM CMS and the CIM Extension nodes is up and running.
- Verify that the HPOM agent is correctly installed and configured on the management server, and the HPOM agent processes (especially the control agent and message agents) are running.

- Make sure that HP SE SRM CMS and CIM Extension nodes are added to the appropriate node groups (see [Task 2: Assign Nodes to the HP SE SRM Node Group](#) on page 25).

HP SE SRM services are not visible in the HPOM console

Solution:

- Make sure that the connection between the HPOM and the HP SE SRM CMS nodes is up and running.
- Verify that the HPOM agent is correctly installed and configured on the management server, and the HPOM agent processes (especially the control agent) are running.
- If the HP SE SRM CMS credentials are invalid, there might be error messages in the service discovery log at <OvAgentDir>\log\javaagent.log on the HP SE SRM CMS node indicating authentication failures.
- Make sure that the Service Discovery policies present in **Policy Management > Policy Groups > HP Storage Essentials SRM > Service Discovery** are deployed on the HP SE SRM CMS nodes. To check whether the policies are correctly deployed, right-click the node, select **View > Policy Inventory**, and ensure that the Service Discovery policies are present. You can also check the service discovery log at <OvAgentDir>\log\javaagent.log on the HP SE SRM CMS node for error messages.

Auto-deployment of policies fails on OVOW 7.50

Verify that the following registry key is set to value 0:

SOFTWARE\Hewlett-Packard\OVEnterprise\Management
Server\AutoDeployment\Disable

SHS-related tools fail on non-root HTTPS node; says cannot open SPI_SE.xml

When the HPOM agent is migrated from root user to non-root user, the Version Verify tools fail with the following error.

```
Cannot open collector output file /tmp/SPI_SE/SPI_SE.xml for writing.
```

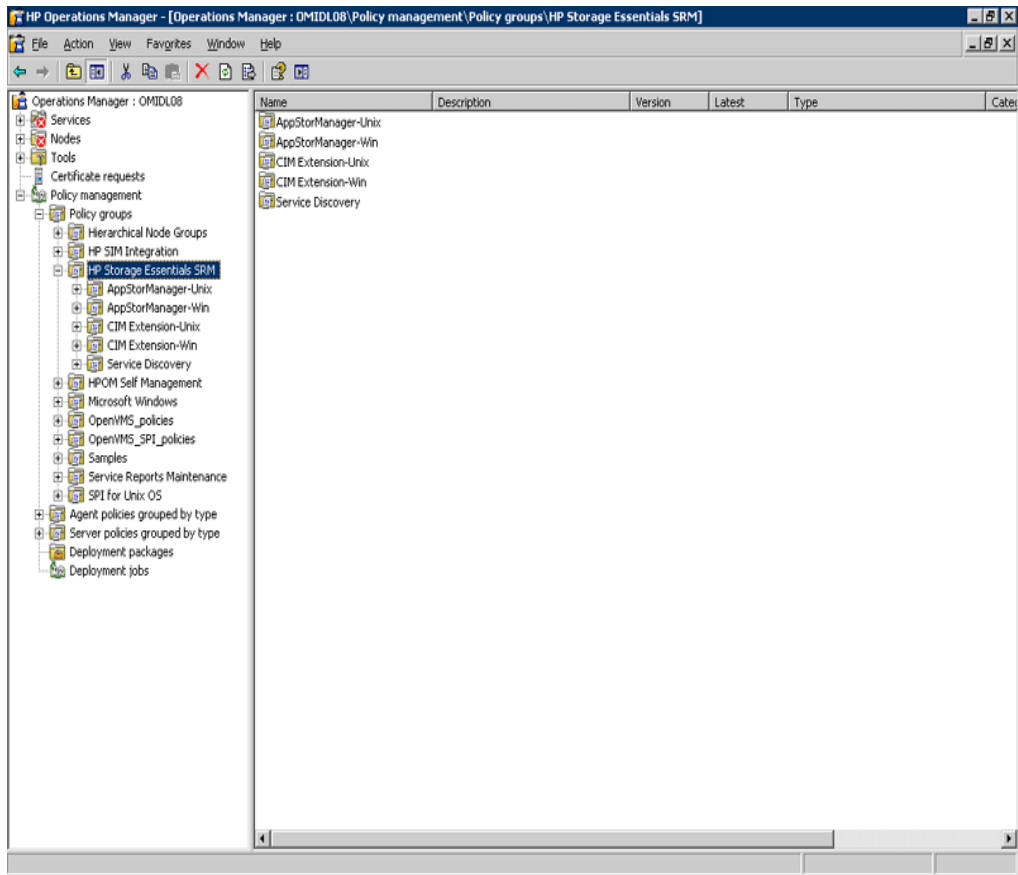
Solution:

If the HPOM agent is migrated from root user to non-root user, delete or rename the HP Storage Essentials SRM SPI files/directories from /tmp on the nodes that were created by root user.

A HP Storage Essentials SRM SPI Policy Groups

The high-level HP Storage Essentials SRM policy groups are available in HP Storage Essentials SRM SPI policy groups.

The policies provided with the HP Storage Essentials SRM SPI are grouped under the HP SE SRM policy group as shown in the following figure.



Messages generated by the HP Storage Essentials SRM SPI policies are assigned an HPOM severity level as defined in the policy groups. By default, all messages generated by an HP Storage Essentials SRM SPI policy belong to the HPSESRMSPI-StorageEssentials_SRM message group.

Policies in the AppStorManager and CIM Extension policy groups for the indicated operating systems monitor the status of the AppStorManager service running on HP SE SRM CMS nodes, and the HP SE SRM CIM Extension service running on the HP SE SRM managed nodes. These policies generate messages to indicate any status change in the monitored services.

Policies in the Service Discovery policy group discover the SE SRM services when deployed on HP SE SRM CMS nodes.

Table 14 List of policies in the Service Discovery policy group

Policy Group	Policy Name	Description	Policy Type
AppStorManager-Unix	HPSESRMSPI-AppStorManager-Unix	Monitor HP Storage Essentials SRM AppStorManager service on Unix.	Measurement Threshold
AppStorManager-Win	HPSESRMSPI-AppStorManager-Win	Monitor HP Storage Essentials SRM AppStorManager service on Windows	Measurement Threshold
CIM Extension-Unix	HPSESRMSPI-CIM Extension-Unix	Monitors HP SE SRM CIM Extension on Unix	Measurement Threshold
CIM Extension-Win	HPSESRMSPI-CIM Extension-Win	Monitors HP SE SRM CIM Extension on Windows	Measurement Threshold
Service Discovery	HPSESRMSPI-Storage Essentials_SRM_Services	Discovers services of the hosts managed by the SE SRM AppStorManager	Service Auto-discovery



The CIM extension can be either an extension to the Windows WMI service or a separate executable called AppStorWin32Agent service. The HPSESRMSPI-CIM_Extension-Win monitor policy monitors only the AppStorWin32Agent service. HPSESRMSPI-CIM_Extension-Win is disabled if this service is not present or only the extension to the WMI service is present on a Windows managed node.

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